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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/715,576

11/17/2000

Hua-Shuang Kong

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05/10/2007

SUMMA, ALLAN & ADDITON, P.A.

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SUITE 200

CHARLOTTE, NC 28277

EXAMINER

KACKAR, RAM N

ART UNIT

PAPER NUMBER

1763

MAIL DATE

DELIVERY MODE

05/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/715,576

Applicant(s)

KONG ET AL.

Examiner

Ram N. Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22,24,49 and 50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22,24,49 and 50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/26/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/1/2007 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 22, 24, 49 and 50 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over M Pradetto (DE 3827506).**

M Pradetto discloses a reactor vessel of quartz (Fig 1-5 and Col 3 line 42) which would make it transparent to electromagnetic radiation, having a gas supply system (3), induction coils as a source of electromagnetic radiation (19), being barrel type (Fig 1), thermally responsive, hollow inverted type of susceptor (1) made of thermally responsive graphite coated with silicon carbide, defined by a plurality of planer surfaces connected at adjacent sides, spaced optimally to allow flow of reactive gases without obstruction as well as allow them to heat each other (Fig 1),

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and plurality of pockets to receive substrates which could be loaded with robotic transfer mechanism.

M Pradetto further teaches that the substrates are parallel to each other and contribute to heating each other so as to have uniform heating.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 22, 24 and 49 are rejected under 35 U.S.C. 103(a) as unpatentable over Thomas F Briody (US 3659552) in view of Ryozo Sato (JP 64025541).**

Thomas F Briody discloses a reactor vessel of quartz (Fig 1-13 and Col 2 lines 38-41) which would make it transparent to electromagnetic radiation, having a gas supply system (29), induction coils as a source of electromagnetic radiation (41), being barrel type (Fig 1), thermally responsive, hollow inverted type of susceptor (15) made of thermally responsive graphite (Col 1 lines 42-54), defined by a plurality of planar surfaces (Fig 2 and 3-18) on the inside of a cylindrical susceptor (connected at adjacent sides), spaced optimally to allow flow of reactive gases without obstruction as well as allow them to heat each other (Fig 1), and plurality of pockets to receive substrates (Fig 1).

Thomas F Briody does not disclose that its susceptor is made by planar sidewall sections connected at sides.

Ryozo Sato discloses a similar apparatus with a cylindrical susceptor in a quartz reaction tube having planer surfaces inside to support substrates and is disclosed inductively heated. Further, this structure is disclosed to be made of sections connected together (Fig 6) and the sections could be individual planer sections (Fig 7). A structure like this especially for larger substrates would be better to enable load/unload of substrates.

Therefore modifying the apparatus of Briody et al according to the teaching of Ryozo Sato in order for getting manufacturing advantage in case of larger substrates and additionally for load/unload convenience would be obvious to one of ordinary skill in the art at the time of invention.

6. Claims 22, 24 and 49 are rejected under 35 U.S.C. 103(a) as unpatentab over Thomas F Briody (US 3659552) in view of Kobayashi et al (JP 62257720).

Thomas F Briody discloses a reactor vessel of quartz (Fig 1-13 and Col 2 lines 38-41) which would make it transparent to electromagnetic radiation, having a gas supply system (29), induction coils as a source of electromagnetic radiation (41), being barrel type (Fig 1), thermally responsive, hollow inverted type of susceptor (15) made of thermally responsive graphite (Col 1 lines 42-54), defined by a plurality of planer surfaces (Fig 2 and 3-18) connected at adjacent sides, spaced optimally to allow flow of reactive gases without obstruction as well as allow them to heat each other (Fig 1), and plurality of pockets to receive substrates (Fig 1).

Reasoning as above, could be applied to Kobayashi et al, since in this references large number of planer sections connected together makes the susceptor appear to be cylindrical (ring).

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7. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas F Briody (US 3659552) in view of Ryozo Sato (JP 64025541) or in view of Kobayashi et al (JP 62257720) as applied to claims 22, 24 and 49 and further in view of Martin et al (US 4579080).

Thomas F Briody discloses a reactor vessel containing thermally responsive graphite (Col 1 lines 42-54) but does not disclose graphite coated with silicon carbide.

It is well known that graphite is coated with silicon carbide to prevent migration of carbon in to silicon substrate.

Martin et al disclose a reactor vessel containing susceptor made of a thermally responsive material, graphite, coated with silicon carbide (Col 7 line 60) heated by induction coils as a source of electromagnetic radiation.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to coat graphite susceptor of Thomas F Briody by silicon carbide in order to prevent migration of carbon.

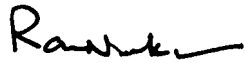
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ram Kackar
Primary Examiner AU 1763